



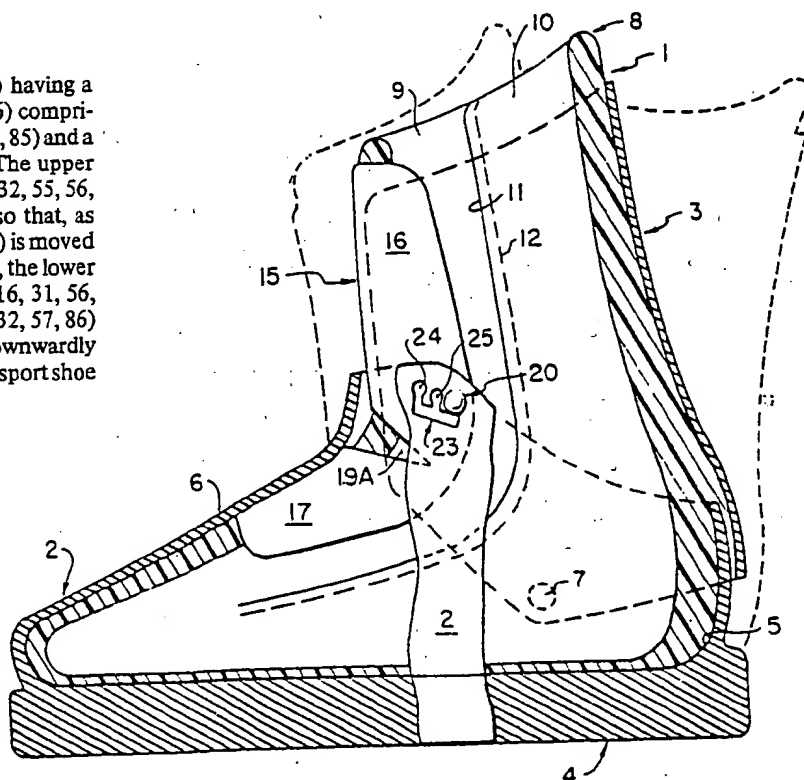
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(54) Title: A SPORT SHOE WITH A DYNAMIC TONGUE ASSEMBLY

(57) Abstract

A sport shoe (1, 50, 70) having a tongue assembly (15, 30, 55, 76) comprising an upper section (16, 31, 56, 85) and a lower section (17, 32, 57, 86). The upper and lower sections (16, 17, 31, 32, 55, 56, 85, 86) are movably coupled so that, as the upper section (16, 31, 55, 86) is moved toward the toe of the sport shoe, the lower portion of the upper section (16, 31, 56, 85) and the lower section (17, 32, 57, 86) press a foot rearwardly and downwardly toward a heel cup (5, 79) of the sport shoe (1, 50, 70).



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A SPORT SHOE WITH A DYNAMIC TONGUE ASSEMBLY
RELATED APPLICATIONS

This is a continuation in part of applicant's application S.N. 104,611 filed January 4, 1980 entitled "A Sport Shoe With A Dynamic Cuff Assembly", applicant's application S.N. 104,283 filed December 17, 1979 entitled
5 "A Dynamic Internal Fitting System For A Sport Shoe", applicant's application S.N. 104,282 filed December 17, 1979 entitled "Sport Shoe With Dynamic Tongue Assembly", applicant's application S.N. 50,436 filed June 20, 1979 entitled "A Dynamic Internal Fitting System With A Movable
10 Foot Bed For A Sport Shoe", and applicant's application 886,946 filed March 15, 1978 entitled "A Dynamic Internal Fitting System For A Sport Shoe".

BACKGROUND OF THE INVENTION

The present invention relates to internal
15 fitting systems for sport shoes in general and in particular to a novel internal fitting system for a ski boot or the like.

A conventional ski boot as presently used in downhill skiing comprises a relatively rigid exterior
20 lower shell member, an upper cuff member and a relatively soft interior liner. The shell member and cuff member are designed to provide mechanical protection and support for a foot, ankle and lower leg and to provide a stable means for releasably securing the ski boot to a ski...
25 Frequently, the shell member and the cuff member are



pivotably coupled in the proximity of the ankle. Boots constructed with a pivoting cuff member generally provide restraint against excess sideways and rearward bending at the ankle while providing limited forward bending of the leg relative to the foot. Less commonly, boots are constructed without a pivoting cuff member and forward bending is restricted or accomplished by providing for a separation of the upper forward section of the cuff member.

The relatively rigid exterior lower shell member and upper cuff member in conjunction with the relatively soft interior liner, in addition to providing mechanical support, must also provide a restraint against upward, forward, rearward and sideways movement of the foot. This restraint is desirable to minimize foot discomfort and fatigue from recurring pressure areas and continual movement of the foot in the boot. It is also necessary to control the skis during various skiing maneuvers and in various terrain and snow conditions. Further, it is essential for minimizing foot movement in order to maximize energy transmission between the foot and the release binding in a potential injury-producing fall.

In practice, the magnitude of restraint required from one moment to the next will vary as the skiing conditions and the maneuvers being executed change. Ideally, the boot should provide for a close, though relatively loose, comfortable fit that provides circulation and warmth during the tracking phase of skiing while also providing for at least a momentary tighter fit during the turning phase or other forceful maneuvers of skiing.

Except for the inventions disclosed in applicant's previously filed applications, the design of conventional ski boots generally does not adequately compensate for the dynamic conditions that prevail in downhill skiing. With conventional boots, during a turn when skiing on packed snow, forward bending at the ankle is usually accompanied by a tendency for hindfoot



upward movement and forefoot sideways movement because ski control and turning are usually accomplished by downward and sideways force applied to the forward leading edges of the skis. In powder snow, the forward leading edges are kept raised for planing on top of the snow with a tendency for forefoot upward and sideways movement. When maneuvering in snow of different consistencies or in bumpy or mogly terrain, the skier alternates, frequently and rapidly, between forward and rearward bending in the boots. As a result of this movement, ski control is significantly reduced. In most injury-producing fall conditions, excess movement of a foot in a boot also reduces energy transmission between the foot and the release binding.

Because shell molds are expensive to manufacture, it has been the practice to supply a limited number of shell sizes. Manufacturers then rely upon buckles with numerous and complex adjustment and liners of various configurations and constructions to provide a close, comfortable and warm fit, to compensate for innumerable foot sizes and shapes, and to achieve the necessary foot restraint. However, these fitting arrangements are generally unsatisfactory. The use of buckles with numerous and complex adjustments usually results in a nonconforming fit. The buckle closure required to provide a close fit usually results in uncomfortable pressure areas because of the consequent distortion of the relatively rigid shell. Additionally, conventional buckle arrangements usually do not adequately restrain the foot from sideways movement at the hindfoot and forefoot.

The use of liners of various configurations and constructions also frequently results in a nonconforming fit. Because of the difficulty in supplying liner configurations that will accommodate the wide range of variation of foot sizes and shapes such as a splay or wide forefoot, wide base, angulated heel, halux valgus, boney prominences, spurs, high longitudinal arch or one foot in



size variance with the other foot, liners are generally manufactured to conform to only a limited range of size and shape. Manufacturers then rely upon various liner constructions to provide a close comfortable fit. Among the constructions used there are included molded and sheet foam rubber, urethane foam, wax, cork, plastic beads, and other various flow materials. The numerous materials used is indicative of the unsatisfactory results obtained.

In spite of the above fitting arrangements, conventional boots do not provide adequate adjustment for comfort and restraint and a relatively large inventory of many shells and liner configurations and constructions is necessary to satisfy customer requirements. Moreover, a satisfactory fit in the ski shop is still often unsatisfactory on the ski slope because the foot is not necessarily fitted for skiing conditions.



SUMMARY OF THE INVENTION

In view of the foregoing, a principal object of the present invention is a sport shoe and boot fitting system, and in particular a ski boot fitting system which reduces the number of shell sizes, liner configurations and constructions required to achieve a close, comfortable and warm fit, which provides necessary foot restraint over a wide range of foot sizes and foot shapes and which dynamically adjusts the fit of the boot to a foot and leg during all skiing maneuvers.

Another object of the present invention is a fitting system that requires only one adjustment to fit the boot to a foot.

Another object of the present invention is a fitting system that dynamically tightens the fit of the boot with forward lean and loosens the fit of the boot with rearward lean.

Still another object of the present invention is a fitting system of the type described above in which the principal means for dynamically adjusting the fit of the boot is a movable tongue assembly comprising an upper section and a lower section, means for movably coupling the lower section to the upper section and means for movably coupling the upper section to the boot.

Still another object of the present invention is a fitting system comprising a movable tongue assembly as described above with means adjustably coupling the tongue assembly to the boot for adjusting the fit of the boot to different sized feet.

In use, during forward lean, the upper section is rotated toward the toe of the boot about a pivot axis formed by the means provided for coupling the upper section to the boot. As the upper section is pivoted forwardly, a lower portion of the upper section and the lower section are pivoted rearwardly and downwardly for pressing a lower extremity rearwardly and downwardly toward the heel of the boot to momentarily tighten the



fit. In one embodiment, the upper and lower sections are movably coupled at the lateral edges thereof and, in an alternative embodiment, the upper and lower sections are pivotably coupled at the mid-point thereof.



BRIEF DESCRIPTION OF THE DRAWING

The above and other objects, features and advantages of the present invention will become apparent from the following detailed description of the accompanying drawing 5 in which:

Fig. 1 is a side elevation view of a ski boot according to the present invention.

Fig. 2 is a cross-sectional view of a tongue assembly in a ski boot according to the present invention.

10 Fig. 3 is a front elevation view of Fig. 2.

Fig. 4 is a transverse cross-sectional view of the coupling assembly coupling the tongue assembly to the boot.

Fig. 4A is a partial enlarged elevation view of a tongue-adjusting slot according to the present invention.

15 Fig. 5 is a front elevation view of the tongue assembly shown in Figs. 2 and 3.

Fig. 6 is a side elevation view of the tongue assembly of Fig. 5.

20 Fig. 7 is a cross-sectional view of a ski boot incorporating an alternative tongue assembly according to the present invention.

Fig. 8 is a front elevation view of Fig. 7.

25 Fig. 9 is a partial cross-sectional view showing the adjustable coupling assembly coupling the tongue assembly of Figs. 7 and 8 to the ski boot.



DETAILED DESCRIPTION OF THE DRAWING

Referring to Figs. 1-6, there is provided in accordance with the present invention a ski boot designated generally as 1. In the ski boot 1 there is provided a lower shell member 2 and an upper cuff member 2. The lower
5 shell member 2 is provided with a sole portion 4, a heel cup 5 and a forward overlying portion 6 for covering and protecting the forward portion and toes of a foot enclosed thereby.

The cuff member 3 is pivotably coupled to the
10 shell member 2 as by a rivet or the like 7. In a closed position it may move from a position as shown in Fig. 2 to a position approximately twenty degrees forward of a vertical line extending through the rivet 7 perpendicular to the plane of the sole portion 4 of the lower shell
15 member 2. The cuff member 3 is restrained from pivoting rearwardly by the overlap of the front of the cuff member 3 on the lower shell member 2.

For warmth and comfort there is provided, extending throughout the interior of the shell member 2 and cuff
20 member 3, a liner designated generally as 8. The liner 8 is provided with a forward section 9 and a rearward section 10. The forward section 9 and the rearward section 10 are split along a lateral line designated generally as 11 for facilitating the entry of a foot into the boot. To insure
25 warmth and a close comfortable fit, the liner sections 9 and 10 are slightly overlapped, as shown by the dotted line at 12.

Immediately behind the instep portion of the boot, there is provided a movable tongue assembly designated generally as 15. In the tongue assembly 15 there is provided
30 an upper section 16 and a lower section 17. The lower section 17 is movably coupled to the upper section 16 at a first point 18 and at a second point 19 located intermediate said sections 16 and 17 and near the right and left lateral
35 edges thereof. The shape of the lower section 17 is such that it extends over a substantial portion of the instep

and forefoot for minimizing forward and sideways movement of a foot.

5 The upper and lower sections 16 and 17 are coupled at points 18 and 19 by resilient material used in fabricating the upper and lower sections. Alternatively, they may be pivotably coupled as by a rivet with other suitable means being provided for providing a resilient coupling between the two sections.

10 In addition to being resiliently coupled, upper and lower sections 16 and 17 are separated by a clearance space designated generally as 19a along a line extending from the first point 18 over the instep portion thereof to the second point 19. The separation between the upper and lower sections 16 and 17 comprises a predetermined
15 distance along a line extending from the midpoint of the lower edge of the upper section and the midpoint of the upper edge of the lower section, which predetermined distance corresponds to a predetermined maximum distance of movement of said upper section 16 toward the toe of
20 said boot relative to said lower section 17.

To movably couple the tongue assembly 15 to the boot 1, the upper section 16 is coupled to the lower shell member 2 by means of a pair of rivet-type pin members 20 and 21. For adjusting the position of the tongue
25 assembly 15 relative to the heel cup 5, the pin members 20 and 21 are each provided with an internal head 21a and an external head 21b for fixedly attaching the upper section 16 in a tongue-adjusting slot designated generally as 22. The tongue-adjusting slot 22 is provided with a
30 lower elongated slot portion 23 and a plurality of shorter slot portions 24, 25 and 26 extending generally upwardly and vertically therefrom. Each of the slot portions 24, 25 and 26 are provide with a pair of inwardly projecting wall portion 27 and 28. As seen more clearly in Fig. 4A,
35 the inwardly projecting wall portions 27 and 28 are provided for securing the pins 20 and 21 in the slots 24, 25 and 26. The heads 21b on the ends of the pins 20 and



21 from being withdrawn inwardly from the slots 24-26.

Typically, the upper and lower sections 16 and 17 of the tongue assembly 15 are fabricated with a padding 16a of a relatively soft interior foam-like material and a relatively rigid exterior shell 16b to which the interior padding 16a is affixed.

Referring to Fig. 6, during forward lean the upper section 16 is pivoted about the axis of the pin members 20 and 21 toward the toe of the boot 1. As shown by the broken lines, as the upper section 16 is pivoted toward the toe of the boot 1, a lower portion of the upper section 16 and the lower section 17 are pivoted rearwardly and downwardly for pressing a lower extremity rearwardly and downwardly toward the heel cup 5 at the lower rear end of the shell 2. Alternatively, the lower section 17 can be removed so that the lower portion of the upper section 16 can pivot rearwardly in conjunction with the upwardly pivoting foot bed as disclosed in S.N. 50,436 for pressing a leg and foot toward the heel cup. During rearward lean the upper section 16 and lower section 17 are rotated in the opposite direction to relieve pressure from the leg and foot. The space 19a between the upper and lower sections 16 and 17 provides a clearance for permitting the pivoting of the upper and lower sections 16 and 17 together during forward lean.

To adjust the tongue for different sized feet, the pins 20 and 21 are moved from one of the slots 24, 25 and 26 to another of the slots by pushing the pins past the wall portions 27 and 28 and into the slot 23. When the desired fit is achieved, the pins are again pushed past the wall sections 27 and 28 into the desired slot.

Thus, the ski boot provides for a close fit during the tracking phase of skiing while providing for a momentary tightening during the turning phase or other forceful maneuvers of skiing.

Referring to Figs. 7-11, there is provided in another embodiment of the present invention an alternative movable tongue assembly designated generally as 30. For



clarity, features of Figs. 7-11 which are identical to features shown in Figs. 1-6 bear the same identifying notation.

5 In the tongue assembly 30 there is provided an upper section 31 and a lower section 32. The upper and lower section 31 and 32 are movably resiliently coupled at the midpoint of the upper edge of said lower section 32 and the lower edge of said upper section 31. Extending from said midpoint to the lateral edges thereof, the upper
10 and lower sections are split so as to provide a pair of clearance spaces 33 and 34 between the upper and lower sections 31 and 32.

Along the midline of the upper and lower sections 31 and 32, the sections 31 and 32 are resiliently coupled
15 by means of a resilient spring-like member 35. The spring-like member 25 is coupled to the lower section 32 by means of one or more lower attaching members, such as a rivet 36. Similarly, the upper end of the member 35 is attached to the upper section 31 by means of a removable
20 attaching member such as a spring screw 37. As seen in Fig. 10, above the spring screw 37 there is provided one or more holes 38. The holes 38 are provided for moving the location of the spring screw 37 for changing the force required to change the shape of the resilient member
25 35.

As in the tongue assembly 15, the tongue assembly 30 is provided with a pad 16a comprising an interior padded foam-like material and an exterior rigid shell 16b to which the padded material is attached. For attaching the
30 upper section 31 to the shell 2, the upper section 31 is provided with a pair of pin members 20 and 21 for fitting in a slot 22 provided therefor in the shell 2 as described above with respect to the embodiment of Figs. 1-4.

In use, except for the fact that the upper and
35 lower sections 31 and 32 of the embodiment of Figs. 7-11 move about an axis through the midpoint of the tongue sections rather than about an axis through the lateral



edges thereof, a movement of the upper section 31 causes a corresponding rearward and downward movement of the lower section 32 for pressing a lower extremity downwardly and rearwardly toward the heel cup 5 as described above with respect to the embodiment of Figs. 1-4.

While multiple embodiments of the present invention are described, it is contemplated that still other changes and modifications to the embodiments will occur to those skilled in the art and may be made thereto without departing from the spirit and scope of the present invention. Accordingly, it is intended that the embodiments described be used only for purposes of illustrating the invention and that the scope of the invention should be determined only by reference to the claims hereinafter provided and their equivalents.



WHAT IS CLAIMED IS:

1. A sport shoe comprising:

a movable tongue assembly for engaging a lower extremity, said tongue assembly being movable in response to movement of said lower extremity; and

means for attaching said tongue assembly to said shoe for momentarily tightening and loosening the fit of said shoe restrained to a close fit relative to said lower extremity as said tongue assembly is moved in response to said movement of said lower extremity.

2. A sport shoe according to claim 1 wherein said tongue assembly comprises:

an upper section which wraps around an anterior part of said lower extremity and a lower section which extends about an instep portion thereof; and

means for movably coupling said upper section to said sport shoe for movement of said upper section toward and away from the toe of said sport shoe so that said upper and said lower sections cooperate in dynamically pressing said lower extremity toward the heel of said sport shoe as said upper section is moved toward the toe of said sport shoe during skiing.

3. A sport shoe according to claim 1 wherein said attaching means comprises means for adjustably attaching said tongue assembly to said sport shoe.



4. A shoe according to claim 2 wherein said upper and said lower sections are separated along a line extending from a first point located intermediate said sections and near the left lateral edge thereof, over the instep part thereof, to a second point located intermediate said sections and near the right lateral edge thereof and said means for coupling said upper and said lower sections comprises means for coupling said sections at said first and said second points.

5. A sport shoe according to claim 2 wherein said means for movably coupling said upper section to said sport shoe comprises means for adjusting the location of said coupling of said upper section to said sport shoe.

6. A shoe according to claim 2 wherein said upper and said lower sections are separated along a line extending from the midpoint of the upper edge of said lower section and the lower edge of said upper section to the right and left lateral edges thereof, and said means for coupling said upper and said lower sections comprises means for coupling said sections at said midpoint.

7. A shoe according the claim 4 wherein said means for coupling said upper and said lower sections at said first and said second points comprises means for resiliently coupling said upper and said lower sections so that, as said upper section is moved toward said toe of said shoe, a foot engaged by said lower section will be pressed downwardly and rearwardly by said lower section with a resilient force corresponding to the force of said resilient coupling means.

8. A shoe according to claim 4 wherein said separation between said upper and said lower sections comprises a predetermined distance along a line extending from the midpoint of the lower edge of said upper section



and the midpoint of the upper edge of said lower section, which predetermined distance corresponds to a predetermined clearance for movement of said upper section toward the toe of said shoe relative to said lower section.

5 9. A sport shoe according to claim 5 wherein said means for movably coupling said upper section to said sport shoe comprises pin means extending from said upper section through holes provided therefor in said sport shoe and said adjusting means comprises means for adjusting the location of said pin means in said holes.

5 10. A shoe according to claim 6 wherein said means for coupling said upper and said lower sections at said midpoint comprises means for resiliently coupling said upper and said lower sections so that, as said upper section is moved toward said toe of said shoe, a foot engaged by said lower section will be pressed downwardly and rearwardly by said lower section with a resilient force corresponding to the force of said resilient coupling means.

11. A shoe according to claim 7 wherein said means for resiliently coupling said upper and said lower sections comprises resilient material from which said upper and said lower sections are fabricated.

5 12. A sport shoe according to claim 9 wherein said holes comprises elongated slots extending generally along a line passing through the heel of said shoe for adjusting the position of said upper and lower sections relative to said heel of said shoe.

5 13. A sport shoe according to claim 9 comprising a lower shell member and an upper cuff member movably coupled to said lower shell member and wherein said holes for receiving said pin means for coupling said upper section to said sport shoe are located in the vicinity of the upper forward edge of the top of said lower shell member.



14. A shoe according to claim 10 wherein said means for resiliently coupling said upper and said lower sections comprises a resilient member and means for attaching said resilient member to said upper and said lower sections.

15. A shoe according to claim 9 wherein each of said holes comprises an elongated slot extending generally along a line passing through the heel of said shoe and a plurality of slots extending generally vertically upwardly from said elongated slot for adjusting the position of said upper and lower sections relative to said heel of said shoe.

16. A sport shoe according to claim 13 wherein said upper shell member is located interior of the forward part of said cuff member and moves relative to said cuff member as said cuff member is moved rearwardly and forwardly relative to said lower shell member.

17. A shoe according to claim 14 wherein said means for attaching said resilient member to said upper and said lower sections comprises means for controlling the force required to change the shape of said resilient member.

18. A shoe according to claim 17 wherein said means for controlling the force required to change the shape of said resilient member comprises means for changing the location of said attaching means.

19. A shoe according to claim 18 wherein said resilient member comprises an elongated resilient member having an upper and a lower end, said attaching means comprises lower attaching means for attaching said lower end of said elongated resilient member to said lower section



and upper attaching means for attaching said upper end of said elongated resilient member to said upper section and said means for changing the location of said attaching means comprises means for changing the location of said upper attaching means.

5.

20. A shoe according to claim 19 wherein said means for changing the location of said upper attaching means comprises a removable attaching member.

AMENDED CLAIMS

(received by the International Bureau on 25 May 1981 (25.05.81))

WHAT IS CLAIMED IS:

1. A sport shoe having a shell, a tongue and means securing the tongue to the shoe so that it engages part of a lower extremity of the wearer of the shoe, characterized by means for moving at least a portion of the tongue in response to a predetermined movement of the wearer of the shoe, and tightening means for momentarily increasing the tightness of the fit of the shoe in response to movement of the portion of the tongue so that the predetermined movement by the wearer correspondingly tightens the fit of the shoe on the lower extremity.

2. A sport shoe according to claim 1 wherein the lower extremity includes a foot and the shoe includes a heel receiving member and the tightening means is characterized in that it momentarily increased the tightness of the fit of the heel receiving member on the foot in response to movement of the tongue portion.

3. A sport shoe according to claim 2 wherein the shell is substantially rigid and the tightening means is characterized in that it is at least partially defined by the shell.

4. A sport shoe according to claim 2, characterized by means mechanically coupling the heel receiving member with the tongue.

5. A sport shoe according to claim 4 characterized in that the coupling means is defined by the shell.



6. A sport shoe according to claim 1 wherein the tongue includes an upper section which wraps around an anterior part of the lower extremity and a lower section which extends about an instep portion thereof, characterized in that the upper section defines the portion of the tongue and the tightening means includes means for movably coupling the upper section to the sport shoe for movement of the upper section toward and away from the toe of the sport shoe so that the upper and the lower sections cooperate in dynamically pressing the lower extremity toward the heel of the sport shoe as the upper section is moved toward the toe of the sport shoe during skiing.

7. A sport shoe according to claim 1 characterized by means for adjustably attaching the tongue to the sport shoe.

8. A sport shoe according to claim 6 characterized in that the upper and the lower sections are separated along a line extending from a first point located intermediate the sections and near the left lateral edge thereof, over the instep part thereof, to a second point located intermediate the sections and near the right lateral edge thereof, and the means for coupling the upper and the lower sections comprises means for coupling the sections at the first and the second points.

9. A sport shoe according to claim 6 characterized in that the means for movably coupling the upper section to the sport shoe comprises means for adjusting the location of the coupling of the upper section to the sport shoe.



10. A sport shoe according to claim 6 characterized in that the upper and the lower sections are separated along a line extending from the midpoint of the upper edge of the lower section and the lower edge of the upper section to the right and left lateral edges thereof, and the means for coupling the upper and the lower sections comprises means for coupling the sections at the midpoint.

11. A sport shoe according to claim 8 characterized in that the means for coupling the upper and the lower sections at the first and the second points comprises means for resiliently coupling the upper and the lower sections so that, as the upper section is moved toward the toe of the shoe, a foot engaged by the lower section will be pressed downwardly and rearwardly by the lower section with a resilient force corresponding to the force of the resilient coupling means.

12. A shoe according to claim 8 characterized in that the separation between the upper and the lower sections comprises a predetermined distance along a line extending from the midpoint of the lower edge of the upper section and the midpoint of the upper edge of the lower section, which predetermined distance corresponds to a predetermined clearance for movement of the upper section toward the toe of the shoe relative to the lower section.

13. A sport shoe according to claim 9 characterized in that the means for movably coupling the upper section to the sport shoe comprises pin means extending from the upper section through holes provided therefor in the sport shoe and in that the adjusting means comprises means for adjusting the location of the pin means in the holes.

14. A sport shoe according to claim 10 characterized in that the means for coupling the upper and the lower sections at the midpoint comprises means for resiliently coupling the upper and the lower sections so that, as the upper section is moved toward the toe of the shoe, a foot engaged by the lower section will be pressed downwardly and rearwardly by the lower section with a resilient force corresponding to the force of the resilient coupling means.

15. A sport shoe according to claim 11 characterized in that the means for resiliently coupling the upper and the lower sections comprises resilient material from which the upper and the lower sections are fabricated.

16. A sport shoe according to claim 13 characterized in that the holes comprise elongated slots extending generally along a line passing through the heel of the shoe for adjusting the position of the upper and lower sections relative to the heel of the shoe.

17. A sport shoe according to claim 13 wherein the shoe includes an upper cuff member movably coupled to the shell and wherein the holes for receiving the pin means for coupling the upper section to the sport shoe are located in the vicinity of the upper forward edge of the top of the shell.

18. A sport shoe according to claim 14 characterized in that the means for resiliently coupling the upper and the lower sections comprises a resilient member and means for attaching the resilient member to the upper and the lower sections.



19. A sport shoe according to claim 13 characterized in that the holes comprise an elongated slot extending generally along a line passing through the heel of the shoe and a plurality of slots extending generally vertically upwardly from the elongated slot for adjusting the position of the upper and lower sections relative to the heel of the shoe.

20. A sport shoe according to claim 17 characterized in that the upper section is located interior of a forward part of the cuff member and moves relative to the cuff member as the cuff member is moved rearwardly and forwardly relative to the lower shell member.

21. A sport shoe according to claim 18 characterized in that the means for attaching the resilient member to the upper and the lower sections comprises means for controlling the force required to change the shape of the resilient member.

22. A sport shoe according to claim 21 characterized in that the means for controlling the force required to change the shape of the resilient member comprises means for changing the location of the attaching means.

23. A sport shoe according to claim 22 characterized in that the resilient member comprises an elongated resilient member having an upper and a lower end, the attaching means comprises lower attaching means for attaching the lower end of the elongated resilient member to the lower section and upper attaching means for attaching the upper end of the elongated resilient member to the upper section and the means for changing the location of the attaching means comprises means for changing the location of the upper attaching means.

24. A sport shoe according to claim 23 characterized in that the means for changing the location of the upper attaching means comprises a removable attaching member.



Editorial Note

The claims amended by the applicant under Article 19 (1) of the PCT have not been renumbered in accordance with Section 205 of the Administrative Instructions under the PCT.

The following information is given hereafter in order to facilitate the understanding of the amended claims:

Correspondence between original and amended claims:

Original claimsAmended claims

1	1 (amended)
—	2 (new)
—	3 (new)
—	4 (new)
—	5 (new)
2	6 (amended)
3	7 (amended)
4	8 (amended)
5	9 (amended)
6	10 (amended)
7	11 (amended)
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19	23 (amended)
20	24 (amended)

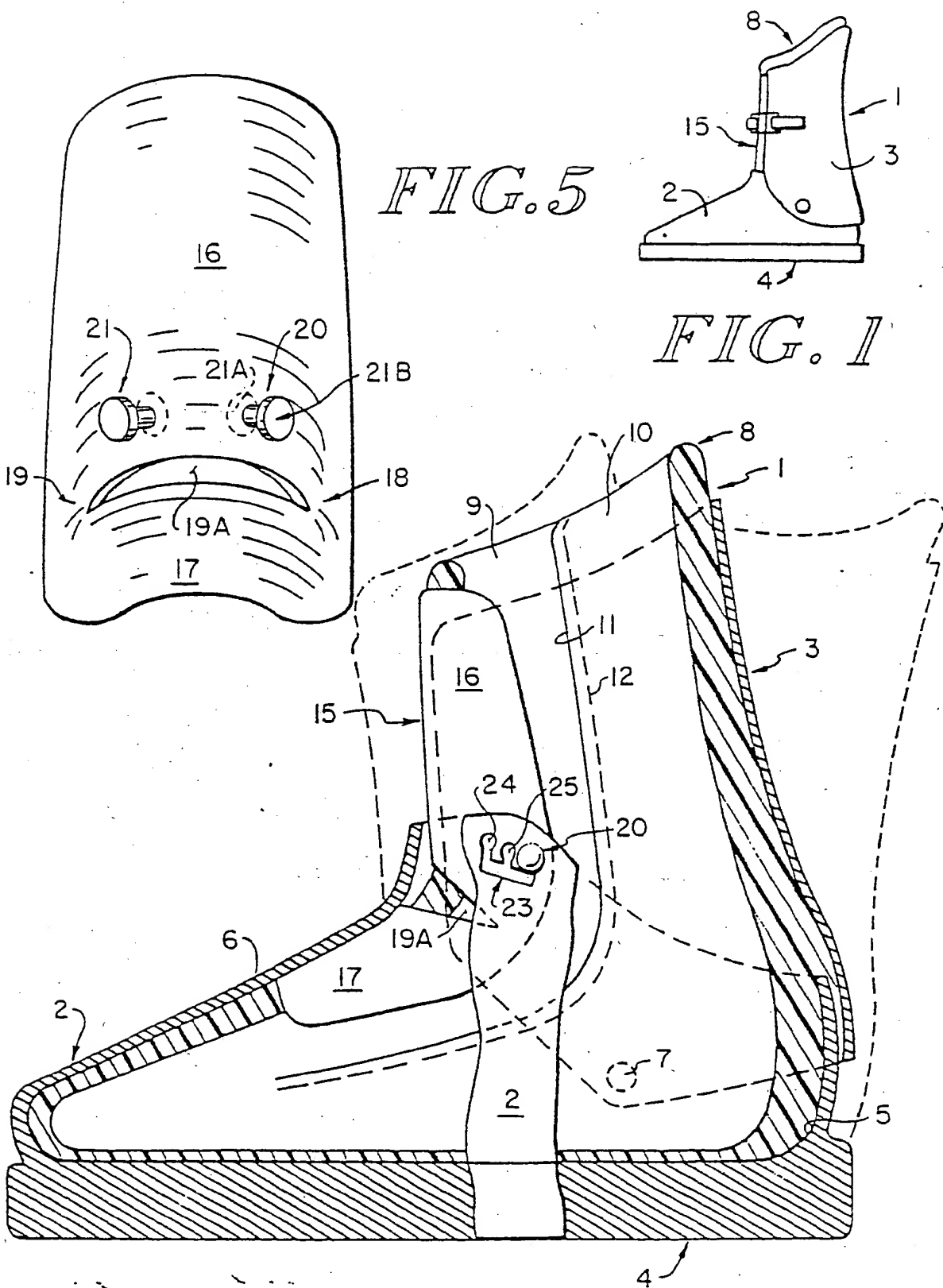


FIG. 2

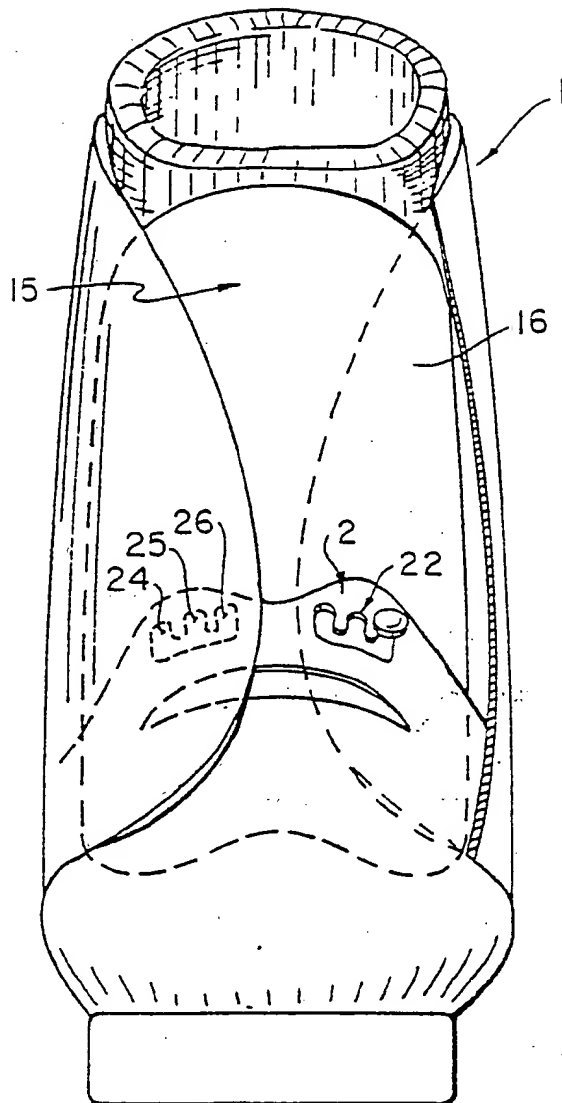


FIG. 3

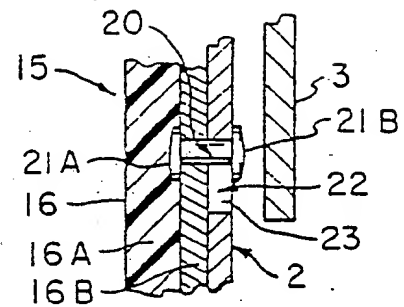


FIG. 4

FIG. 6

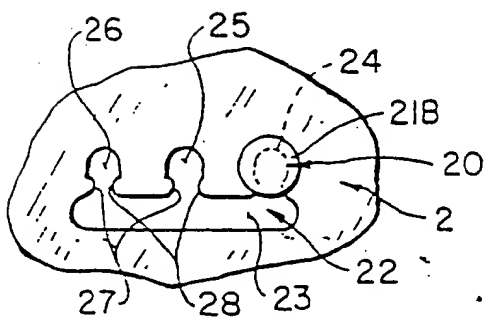
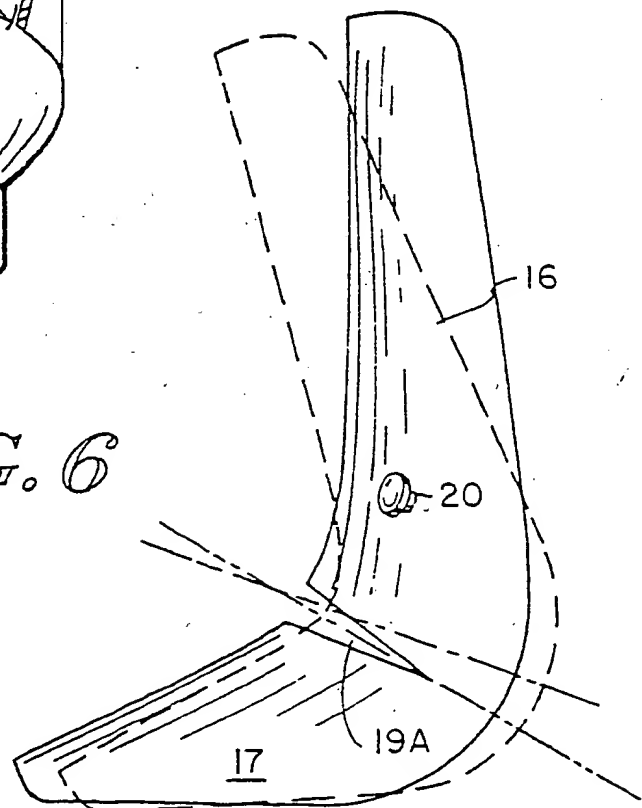


FIG. 4A



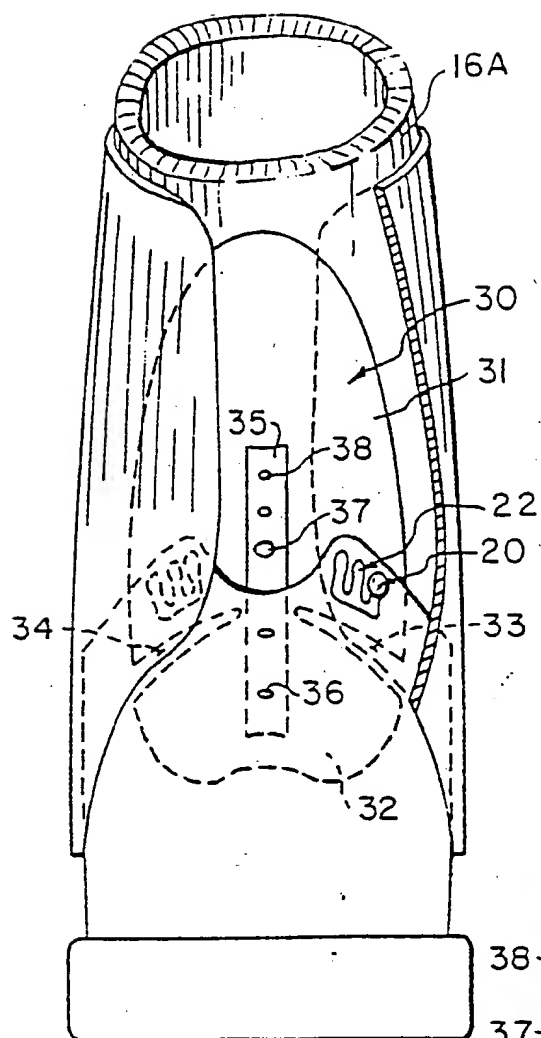


FIG. 8

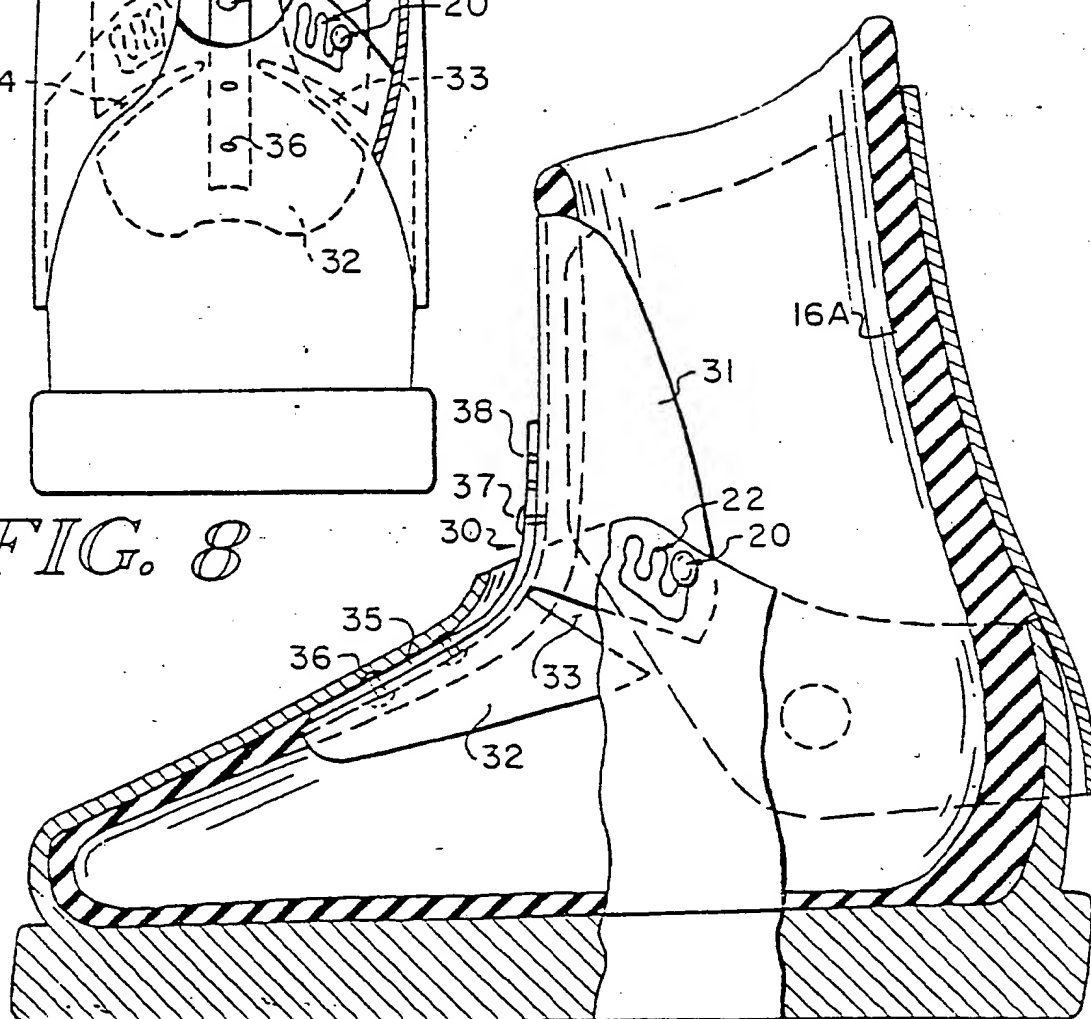


FIG. 7

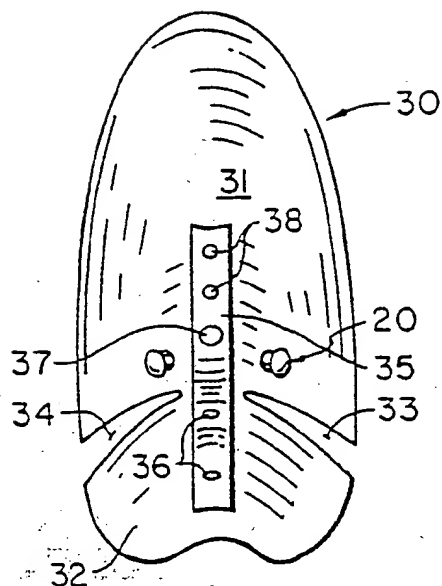


FIG. 10

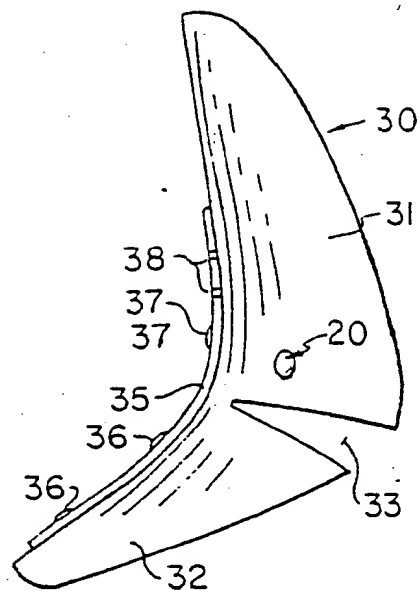


FIG. 11

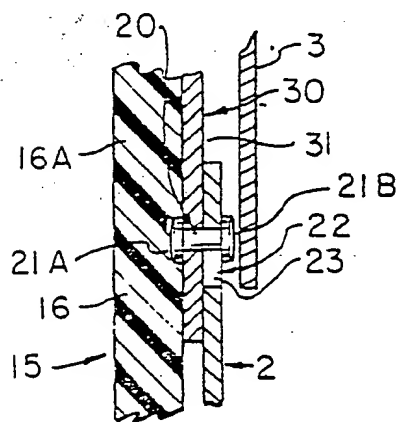
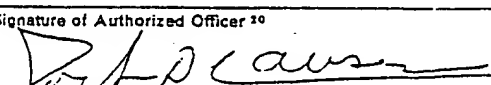


FIG. 9

INTERNATIONAL SEARCH REPORT

International Application No. PCT/US80/01669

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ¹		
According to International Patent Classification (IPC) or to both National Classification and IPC INT. CL. A43B 5/04; A43 B 23/26 U.S.C Cl. 36/119		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
U.S.	36/117, 118, 119, 120, 121, 50, 54	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	US, A, 3,561,139, Published 9 February 1971 Stillman	1-20
¹⁵ Special categories of cited documents: <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>"A" document defining the general state of the art</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document cited for special reason other than those referred to in the other categories</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> </div> <div style="width: 45%;"> <p>"P" document published prior to the international filing date but on or after the priority date claimed</p> <p>"T" later document published on or after the international filing date or priority date and not in conflict with the application, but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance</p> </div> </div>		
IV. CERTIFICATION		
Date of the Actual Completion of the International Search ²		Date of Mailing of this International Search Report ³
17 March 1981		27 MAR 1981
International Searching Authority ¹		Signature of Authorized Officer ²⁰
ISA/US		

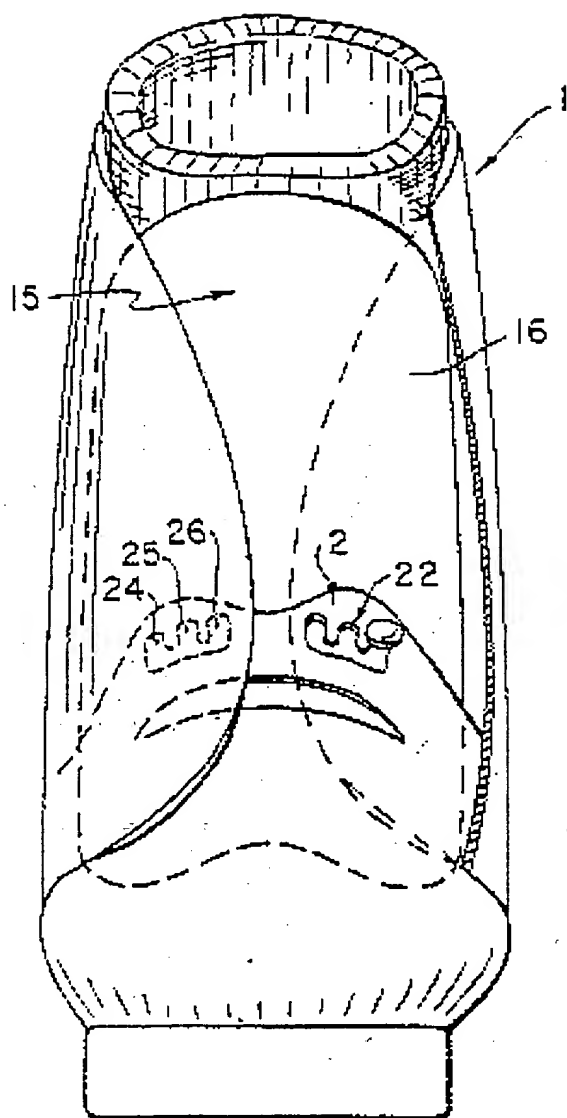


FIG. 3

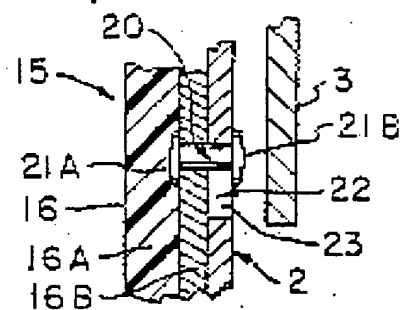


FIG. 4

FIG. 6

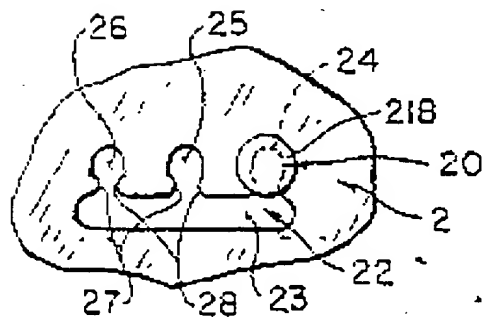
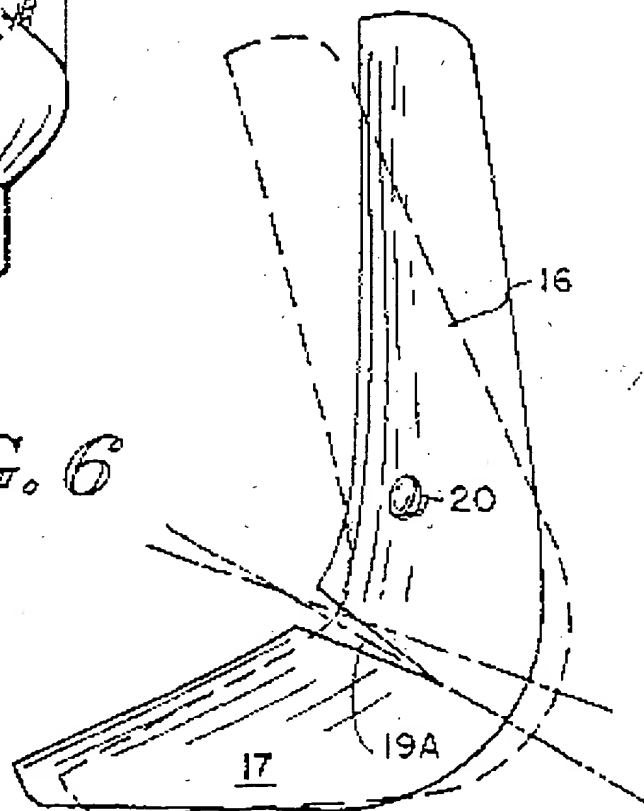


FIG. 4A



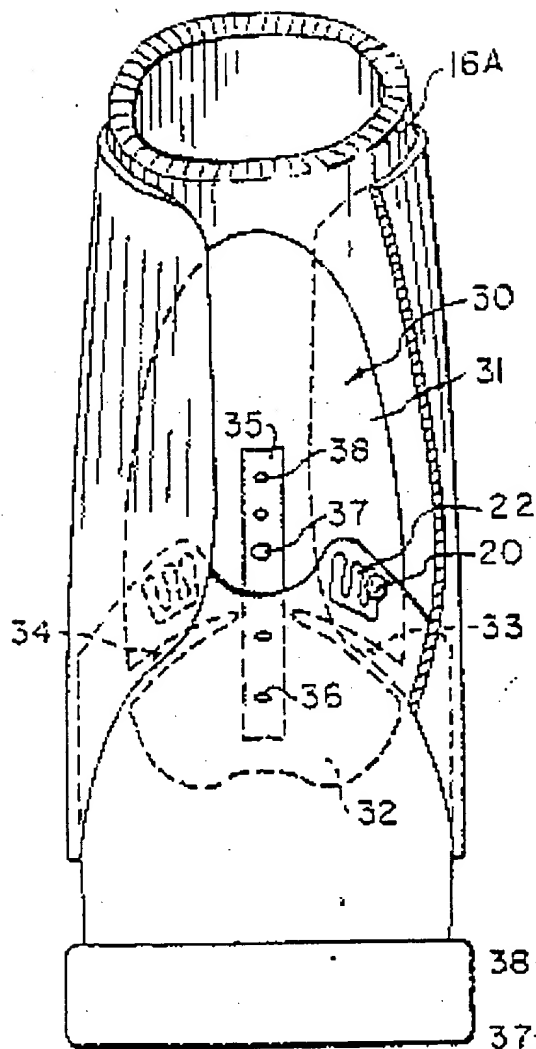


FIG. 8

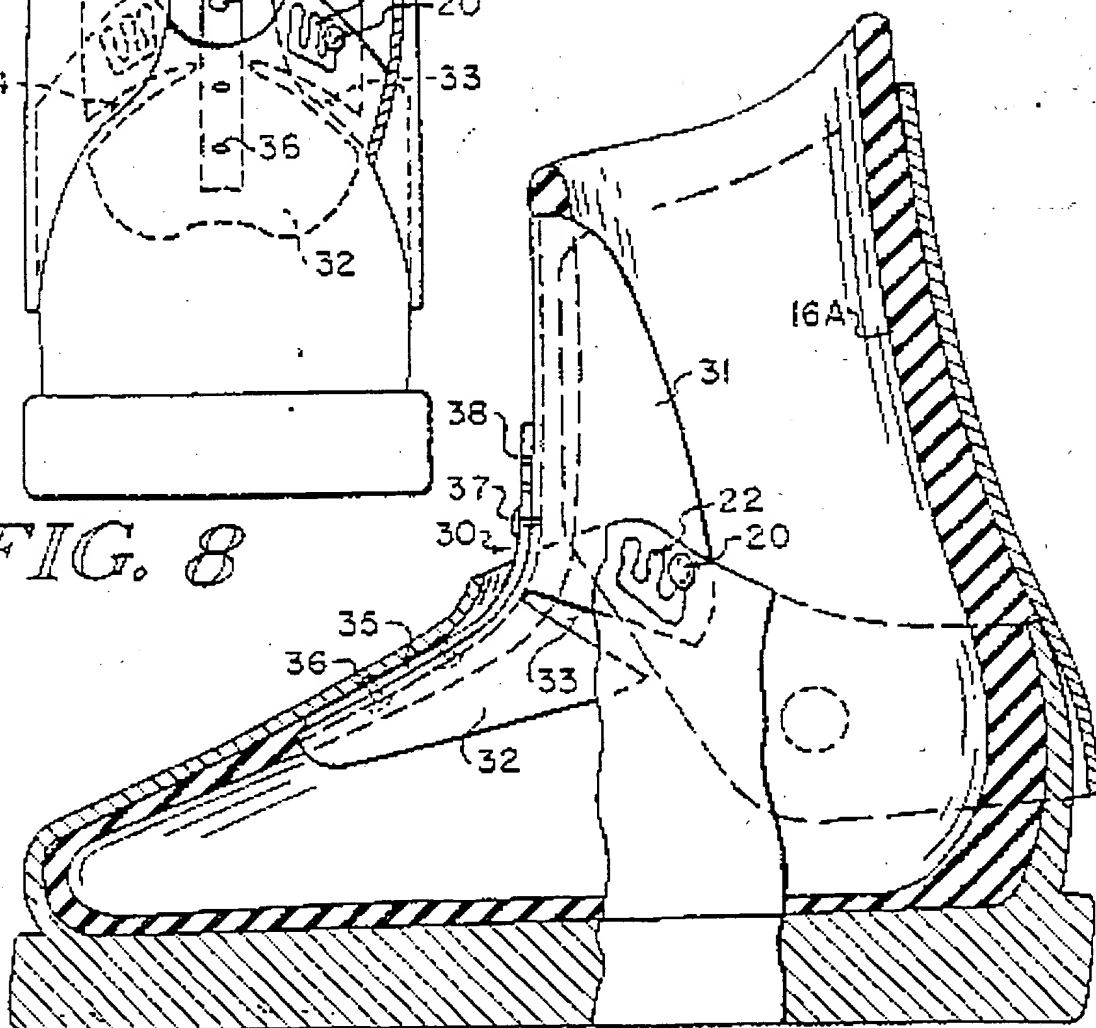


FIG. 7

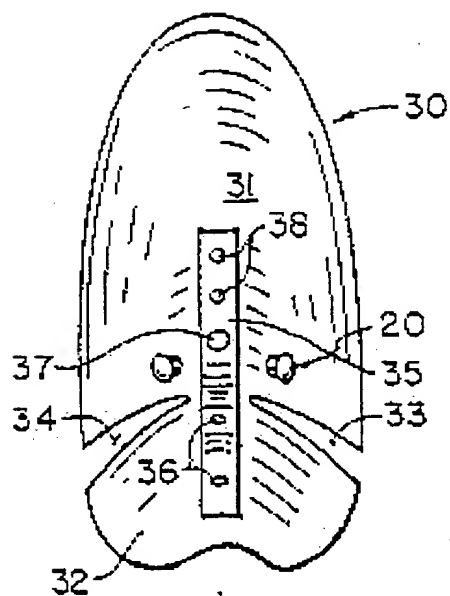


FIG. 10

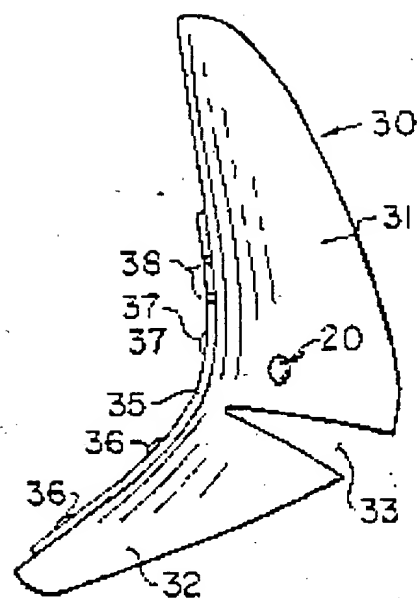


FIG. 11

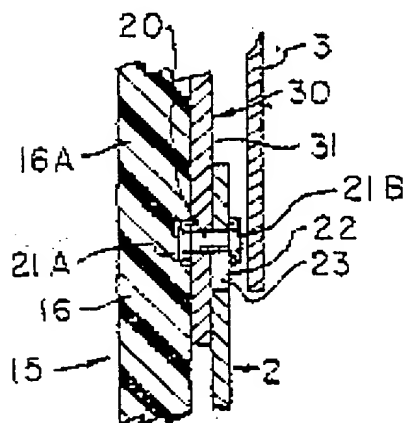


FIG. 9

